

SEQUENCE LISTING

<110> MERKULOV, Gennady et al.

<120> ISOLATED HUMAN LIPASE PROTEINS, NUCLEIC
ACID MOLECULES ENCODING HUMAN LIPASE PROTEINS, AND USES
THEREOF

<130> CL001186DIV

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1360

<212> DNA

<213> Homo sapiens

<400> 1

ctcttactct tcagcctgat gtcaaaagca aaagttcaga agttcctcat caataaggag 60
tccttgtag caggtgaagc tcatctaact aggcatctt atgatgtggc tgcttttaac 120
aacaacttgt ttgatctgtg gaactttaaa tgctggtaga ttccttgatt tggaaaaatga 180
agtgaatcct gaggtgttaga tgaatactag tgaatcatc atctacaatg gctaccagg 240
tgaagagtagt gaagtcacca ctgaagatgg gtatatactc cttgtcaaca gaattcccta 300
tggcgaaaca catgcttagga gcacagggtcc ccggccagtt gtgtatatgc agcatgcct 360
gtttgcagac aatgcctact ggcttgagaa ttatgccaat ggaagcctt gattccttct 420
agcagatgca ggtttatgtatg tatggatggg aaacagtcgg gaaaacactt ggtcaagaag 480
acacaaaaca ctctcagaga cagatgagaa attctgggcc tttagtttg atgaaatggc 540
caaatatgtatc ctcccaggag taatagactt cattgttaat aaaactggc aggagaaaatt 600
gtatitcatt ggacattcac ttggcaactac aatagggtt gtagccttt ccaccatgcc 660
tgaactggca caaagaatca aaatgaattt tgccctgggt cctacgatct cattcaaata 720
tcccacgggc atttttacca gggtttttct acttccaaat tccataatca aggctgtttt 780
tggtacccaaa gggttcttt tagaagataa gaaaacgaag atagcttcta ccaaaatctg 840
caacaataag atactctggt tgatatgtatg cgaatittatg tccttatggg ctggatccaa 900
caagaaaaat atgaatcaga gtcgaatggta tggatatgtatg tcacatgctc ccactgggtc 960
atcagtacac aacattctgc atataaaaca gctttaccac tctgtatgaat tcagagctta 1020
tgactgggaa aatgacgctg ataatatgaa acattacaat cagagtcatc cccctatata 1080
tgacctgact gccatgaaag tgcctactgc tattttggct ggtggacatg atgtcctcgg 1140
aacaccccgatgtggcca ggatactccc tcaaataaag agtctttcat tagtgctaag 1200
cctattgcca gaatggaaac ccaccttta ttttgcgtgg ggccttgatg cccctcaacg 1260
gatgttcagt ggaaatcata acctttaatg aaggcatatt tcctaaatgc caatgcattt 1320
taccttttc aatttaaagg ttggttcca aagcccttac 1360

<210> 2

<211> 395

<212> PRT

<213> Homo sapiens

<400> 2

Met	Met	Trp	Leu	Leu	Leu	Thr	Thr	Cys	Leu	Ile	Cys	Gly	Thr	Leu	
1						5			10				15		
Asn	Ala	Gly	Gly	Phe	Leu	Asp	Leu	Glu	Asn	Glu	Val	Asn	Pro	Glu	Val
						20			25				30		
Trp	Met	Asn	Thr	Ser	Glu	Ile	Ile	Tyr	Asn	Gly	Tyr	Pro	Ser	Glu	
						35			40				45		

Glu Tyr Glu Val Thr Thr Glu Asp Gly Tyr Ile Leu Leu Val Asn Arg
 50 55 60
 Ile Pro Tyr Gly Arg Thr His Ala Arg Ser Thr Gly Pro Arg Pro Val
 65 70 75 80
 Val Tyr Met Gln His Ala Leu Phe Ala Asp Asn Ala Tyr Trp Leu Glu
 85 90 95
 Asn Tyr Ala Asn Gly Ser Leu Gly Phe Leu Leu Ala Asp Ala Gly Tyr
 100 105 110
 Asp Val Trp Met Gly Asn Ser Arg Gly Asn Thr Trp Ser Arg Arg His
 115 120 125
 Lys Thr Leu Ser Glu Thr Asp Glu Lys Phe Trp Ala Phe Ser Phe Asp
 130 135 140
 Glu Met Ala Lys Tyr Asp Leu Pro Gly Val Ile Asp Phe Ile Val Asn
 145 150 155 160
 Lys Thr Gly Gln Glu Lys Leu Tyr Phe Ile Gly His Ser Leu Gly Thr
 165 170 175
 Thr Ile Gly Phe Val Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Arg
 180 185 190
 Ile Lys Met Asn Phe Ala Leu Gly Pro Thr Ile Ser Phe Lys Tyr Pro
 195 200 205
 Thr Gly Ile Phe Thr Arg Phe Phe Leu Leu Pro Asn Ser Ile Ile Lys
 210 215 220
 Ala Val Phe Gly Thr Lys Gly Phe Phe Leu Glu Asp Lys Lys Thr Lys
 225 230 235 240
 Ile Ala Ser Thr Lys Ile Cys Asn Asn Lys Ile Leu Trp Leu Ile Cys
 245 250 255
 Ser Glu Phe Met Ser Leu Trp Ala Gly Ser Asn Lys Lys Asn Met Asn
 260 265 270
 Gln Ser Arg Met Asp Val Tyr Met Ser His Ala Pro Thr Gly Ser Ser
 275 280 285
 Val His Asn Ile Leu His Ile Lys Gln Leu Tyr His Ser Asp Glu Phe
 290 295 300
 Arg Ala Tyr Asp Trp Gly Asn Asp Ala Asp Asn Met Lys His Tyr Asn
 305 310 315 320
 Gln Ser His Pro Pro Ile Tyr Asp Leu Thr Ala Met Lys Val Pro Thr
 325 330 335
 Ala Ile Trp Ala Gly His Asp Val Leu Gly Thr Pro Gln Asp Val
 340 345 350
 Ala Arg Ile Leu Pro Gln Ile Lys Ser Leu Ser Leu Val Leu Ser Leu
 355 360 365
 Leu Pro Glu Trp Glu Pro Thr Phe Asp Phe Val Trp Gly Leu Asp Ala
 370 375 380
 Pro Gln Arg Met Phe Ser Gly Asn His Asn Leu
 385 390 395

<210> 3
 <211> 22067
 <212> DNA
 <213> Homo sapiens

<400> 3
 ttatggccta accttttaa ctttgagtta tttcaagag aaaatttcaa aaaggcgcct 60
 ttgaggagaa agaagcaatc caacaaacaa aaagataacc acactgtaat aggaaatgtg 120
 tttgaatag gacattggaa gaaaaataat aatcattttt acaggttagat cccaaagtca 180
 agatctatg ttcaaccatg tgtgttccac catcttcaca attgaatgag taaccatcat 240
 taaggcgtta gcttaggccg taatatgatt ctggactga gatttcaaaa ataccacagg 300

ctatctatct atcttatctat ctatctatct atcttatctat ttatctatct atctatagat 3780
agaacccctt ctttgaatt tatgttttaa gaatatcaag ctatttgtt atatacatga 3840
ttgccttcta ttgatctata gttctattac tttaaagca agaggggtct caaaaagacaa 3900
ttgacttgat aatatacgat ttgcagaag aatgggtcaa tgctaaattt tcccccaacc 3960
ccccaaataa ttagccaata gtagatattt tttaaaattt tacttatttt gtattaagac 4020
tttattttt aattttacag ttacctgggt ctacaaattt cagataattc accctaataa 4080
gcacacaaca gatggtttgc tttgattctt ttttatatcc tttggagaag ttccactaac 4140
gactgtattt ttactggca gagtgaaatc atcatctaca atggctaccc cagtgaagag 4200
tatgaagtca ccactgaaga tgggtatata ctcctgtca acagaattcc ttatggcga 4260
acacatgcta ggagcacagg tacaagatat gtctctcctg aaaagggac tgcattgacc 4320
tcctgcttct caggaggaat ttaatgctag atatgcatca acagagttt tcaaaatttg 4380
tttgaattat tgatttagtc tttaaatagt tatcagggag gtcactctt tgccgtataa 4440
ttctctgaag acagacagga acctaaaaat acaaacagca agactgatct tgctactgc 4500
aaccagaggt acttggtagg gtgtaaacag aaaggcagag cctgcattt gtcacctcat 4560
tactgattt tcatgtggaa aattgtttt tcccaggaaa atggatctc tcattgtcag 4620
aaggagattt tctaggttgc atgaaattga ctctggggca cccaagaaga acctctcctg 4680
ctcccaactaa aattaagggg ctcctctg caggataaaa aacaatctag ttaaatgaca 4740
acgcatttct gaaaagttt ccaggactga aaaccttaac atccacatac actttgatct 4800
aaggagacaga cggttcataag aatgaaagag tatgggtgtca ataaggctt aattctagaa 4860
tgaggagcca gocatgccat agcagggaa tgatactct taaaaggaa aatthaacta 4920
caaatoctct gaagtagaaa tgataagaat aaccaaaaata tctgaatgg ttcaatagca 4980
aataatttat tggcagctgc ttaccgtgtt cattttgcatttttccc accacacata 5040
ttaaggagca gtgttgtca tggttgcacat tctctccctc ttttatctcc agtttcagaa 5100
tgaaaaatga gagtgagata tgtagtagtt tactagttaa aatatgaaac acccagttaa 5160
atttgaaggt cagataaaaca acaaataattt ttgtataagt ctcattttaa gataatacta 5220
aaaagtctt atttattcac tattatcact atttataaaa tttttagag catcctgtat 5280
cttttgcctt acttttgcattt ttatttttgc taaatctgg caatcccagg cacatgtgt 5340
aaggagctgt gaaatataaa aggagaaaac ttttatggga aagatttggc ttaaggagag 5400
ataattttgg aaagatttag aattaaagat cattcatttag atgtaatgtt ctaaataactt 5460
tatatctatctt aaacttctca tcaacaatataat gagatgggtt ccactaatag tcaccattc 5520
acaaatgtatg aaattaaggc acaaccgtt atgttaagag gcctaaagtc cacaatagc 5580
aagctgacag accagaattt aagcccgaggc atgctggctc cagagcctgt gctcttagtc 5640
attaaatttat agtgccttac ttgaccttcc accctgggtt ctttggatct ccctgaatgc 5700
tctctccccc tcagaaatac tggaaagtgg cagagggaca ctgagctgag catattattt 5760
tagttttaa atgctctcca ctggacagaa gatggggat ttgaatagaa atttgggtgag 5820
gaactaatca gtgtccattt acactcacct cctctccctc cctggaagag ctataggact 5880
tgagtaagca tgataaaattt cgtgtcttgc taaaccacac ccagaaaattt tgtatataca 5940
aatacataga gcacagtagt ttcaggaca gactttgaca taaaagaac tgggtttgag 6000
tccctgctct ggccttctt tctgggtggc cctctggaa agttacttta ctacataaag 6060
ttttgtttcc atatctacaa aatgggtttt ctcaaaatag cagtagttt atagagttgt 6120
tgcaagaatt tagtaagctt atacatataa atacgtcaac atagcaccag gtacaaaat 6180
atgtgctcaa gaaactgaag ttacctgtt ataatgctt atactattga caagggaaaa 6240
gtgaaaacag tttttgtttt accatgtgtg tatgtgtgtg tgcgtgtat gtttccgaca 6300
tgctcttattt acataaaattt actctcactc tttctctctc tctcttctc tttctccctc 6360
tctcatctta cccttcccc caccagggtcc ccggccagtt gtgtatctc agcatgccc 6420
gtttgcagac aatgcctact ggcttgagaa ttatgccaat ggaagcctt gattccttct 6480
agcagatgca gtttatgtatg tatggatggg aaacagtcgg gggaaacactt ggtcaagaag 6540
acacaaaaca ctctcagaga cagatgagaa attctggcc ttttaggtaaa tattagctaa 6600
gaaaactcaa gggggaaaattt ggaggcaattt taaaaaaat aacgtggacg ctattatga 6660
ttatcttgc cgcttgaatg catatactc cttgttagttt ctgttaagat ctcaaaggag 6720
gttaacagca agaagctctg attttcact gattctccca caagcaaagt atggcatttc 6780
aacaagatca tttttacatc caatctgtg aattctatgc attaaaagta tgcctaaaga 6840
gacagctcag gaaattatca tgaccaatgt gcacattcat tcagccatg tttactgagt 6900
ggctactgtt gtcgcgttgc tagggcccgaa acattcaaac aggaacaga caaactctga 6960
cctcacaacaag ctatgttca ttttagtgcattt aattttacaa gtcattgtct ctggattgcc 7020
aatcaactgt gtaaagatga tttggaccag gaccttattt atttagagaa actgtgattt 7080
atttagagaa actgagatcg cacatagtc cattttcagg aaaactccaa tattagattt 7140

ttaaaacctt gttaatgggc aatgaagaag aatcttttt gatacttgt ttcttttaat 7200
 ggaagagtt tctgctgtca ccagaggaca ggctgatgcc tgcatagac ttttcttct 7260
 tcaggcctaa gctccctgtt ggttgtaaa cctgatgcta gaacagactg tgtattccta 7320
 ttacattaat aaaacattca gtaccactg aaagtggag aatagtggag gaatagaata 7380
 gaatgtata gtctgagttc ttgggcaggg gcaagcatca gggaaatattg aatcattagt 7440
 cttaggagg tgcacaaca attctccat tcttgaatg cccaatctat agatttcctc 7500
 acatgttctt ttaataaaca ggcttcttagc ttatggaata cctgattga ctaaatgtta 7560
 tatagccct tttgttcctc ctgtctgaag aacaaaatac tagtactatg gaatattggt 7620
 atatattaaa tatatatcta tatatccatg tggacaggaa tactactact aacaacatct 7680
 tactgagcac ccactggcag ccagactcg ttccttcata ctatcaaacc ccgttagcag 7740
 cccctaaac caggtactac cctgtttatt tcccaaatga gaaaacatag gctcagagca 7800
 tttcagtaat ttctcaagag ttgcaaaggc cataataatg agaatcatga ttacaaaac 7860
 ccctgttcc aaagatgggt attaaatggt cctaacaatt gtgaagcctc atgtggag 7920
 cagaagtaga ggcacacaaag ccagatgggg aaagggaggg caaagaaaaag caagagaagg 7980
 gaaggaagag gagggatcat aaggtgaac ttcaaataatc atacacaatg ttcaaaatc 8040
 ttccctttat aaggaagtaa aatgtacata tgcagaaaaa caaaaagcta caatagccta 8100
 catataattt gataaataat gaaatacaca ttgaatctaa gtaaacagca tagaatctgg 8160
 gtgtaaaaaaaaa gaagtggaca agtgcgtca gttttaaact taaacttgc agtattttata 8220
 aaagcccctg ttttattttt cagttttat gaaatggcca aatatgatct cccaggagta 8280
 atagacttca ttgtaaataa aactggtcag gagaaattgtt atttcattgg acattcactt 8340
 ggcactacaa taggtatgtt tatgagggtc actgttaggt gtgttttga gggtcagttt 8400
 tctcagagtc ttacaggagt tcacccctt gttggaaataa aacaactgtt acttataatg 8460
 ccctcaattc cctgtccctc gctggaaata accctagtagc tctaagtagc tgcgtgcctc 8520
 cagtgacacag actatatgtt gggcaaaccct ttcctgggtc tctggtcaca gcagcatatt 8580
 gactacggtg atgcaatttc ccagaataa catgtgtcc aaattcaaaag aaataattcc 8640
 acagagaatg tttcttagatt ccctctgagc tgaaaaatgtt aaattcaatg ccatggaaata 8700
 tggctgaaac ataataatgt tgcataatc atctctttt cacaacccca atgggatttt 8760
 taaaaataaa aagggaaaggg cttataccta tatthaaca aattggaaatg gcatggtat 8820
 atttgggtt ggttggaaac acacaagctt actataataa atcaatttgat cttatctatt 8880
 cagtggtgtga tttagtattt atgaaatagc aagtaaatgtt aagcactatg tagaaatttc 8940
 taaagttttt taagctgaca acttacttct taatttactt acttacttta atttacttta 9000
 caatttactt tccaggtatt ttggaaagaa atcaataatc tagttccaaatg taaaagttga 9060
 aaggaacccca cactaataaa agctttgaat ttgtcatgacttccacta aagttccaa 9120
 ttttaagaga ataaatcatg tgaaagtgc atatttcattt tttagggaaat attttcattt 9180
 tcaccactat catcagtaac aaacatataat tcatttagtat tttagattga caggcactt 9240
 ccaagctcag aacaggcagt tagcatcagt cagcatatac taaaaatgtt tcaaagaact 9300
 cataggagat caaaaatgcc accaataggc aaataattac agtatctaactt atttatttgag 9360
 cattcggtat gtgtagggtc ttgtgttcag gacccctcccc acagtatctc cctctgatct 9420
 tcaaaacaac ccgaatgtt ttatccccat ctcatagaag aagaaacaca agttcagaac 9480
 acagattcaa accagatgtt tctgatttca ccaatagggt gtgtaggat tccggagaaa 9540
 tgggttagag aagaagaaat gacttttagt ggtttggaa agtgggttagg acttagat 9600
 gctcttatac ttgatctgca aaaaaaaaaaaa aaaaaaccat ggagaatttg attatctgt 9660
 ctctgtgtttt catttaggac ataaatattt tttagtgcattt ttgtttgcatttggacaga 9720
 gcaatttctg ttatgttaagg agcaccact cttttagga catttagtagt gtcctccac 9780
 attaaacagg gctctgcagt cagcgtgacc ctcaaaaatc tcaccccttccac acatttccaa 9840
 acaccctctg gggaaagtactt attcctgattt cagatctttt ttatcaattt ttcagtcatt 9900
 tatttcattt ctttttttccat tggccaaagac agttttatgt ttccaacaaatg tgtttcattt 9960
 cacacatatac cacacacaca cacacacaca cacatgttagt tggaggccca 10020
 ggaagggacc tctggaaacc aaatttatgtt gatatttccat ctagcctacc cagttgtgt 10080
 ctaatctcca tcctcacaga tatacaaagg ggtcaatgc tactgtgtt agagcaagc 10140
 aaatggagat gcctggcct tactgggcca tcgtggatgc tagggaaatgc ccctttctt 10200
 ttggaaacag ggaagagtct agagggttga aaaacacccca gtaagacact gggaggcagt 10260
 aaatttcattt ccatagtgatg aaagaaaacc tggtagaaata actgggttagt gctcagaaaa 10320
 gaaatcaattt caccctctgt gactgattttt ttgcttctgg aagctctgtt atttattctg 10380
 gcatctcaga gttaggatg aaatgagaat gttgcccagca ttaccccat gcttggaaag 10440
 ttacacacgc agtagctact ccacgacattt aaccatcacc ttcccctgc caactactcc 10500
 atttccccca atcaagtcata actgtccata aatagaataa aataaaattt gggactgtt 10560

ggctatttgt atgttctt ttgagaaaatg tctactcaga tctttgtcc attttaaat 14040
 cagattttt ttttgcatt gagttatag acctcttat atattctgg tactaatccc 14100
 ttgtcagatg gtagttac aaatatttc tctcattcaa caggttctt agttcactt 14160
 gttgatggtc tccttgctt tgcaagaagct ttttagctt acgtaatcta atttggcat 14220
 gtttgcattt gttgcctgtt catttgaggg cttaacctaa attggccag accaatgtcc 14280
 cgaggatgtt ctgtatgtt tgtttttag tagttcata gtttaggtc ttaaatgtgt 14340
 cttaatcca ttttgattt gttttgtat ctggcaagag atagagatct aatttcattc 14400
 ttctgcata tggatatctt ttttccagc atcatttctt gtggaaatttgc tcccttgc 14460
 aatgtatgtt ctgtatgcct ttgtgaaaa tttagttgact ataaatgtgt ggattttttt 14520
 gtgggttctt tattctgtt cattggctt tttatgtt tttatgccag tatcatgc 14580
 ttttgattt tacaggtttg tagtataatt tgaagtcaagg tcatgtatgc cttccagctt 14640
 ttttgcattt tctcagaatc ttatatttag aaaaacgtaa agactccaac aaaaacactg 14700
 cttagaactga taaacaaattt cattaaatgtt gcaggataca acatcaacat aaaaaatcca 14760
 gcagcattt aatatgccaa gagcaaataa tcttaaaaaa aagaaagaaa aaaaaacaag 14820
 aaataatccc atttataataa gctacaatataa aaataaaaaca ccttagaata aaccatacca 14880
 aagaagtgaa agatttctac aatgaaaact ataaaacact gatgaaagaa attgaaaatg 14940
 acataaaaaa atggaaaggt attccatgtt catggatgc aagaatcaat attgttaaaa 15000
 tgtccatatg atccaaaaca atctacagat tcaatgcattt ccctatcaaa ataccaatga 15060
 cattttcat taaaataaaaa aaaaaggccta aaatttaatgtt ggaaccatga aggttagatgt 15120
 ctgtatatac tagaagatata agtactcaac aaaccttggaa tatgaagact ggggaagtga 15180
 ataggcagct tcactcttctt attccctgtt gaaatttagg agaatggatg ttttataatg 15240
 ggtacagtt tcttacatgt tctcaatcg ccataactt caatgttca tttgaattt 15300
 ttgcatttga atatatttggaa taaaataaa aatcctaaaa aaggagagaa gcacatataa 15360
 acctgcgtct tatttcatgtt gttcccttctt ttgtgggtga cttttgtttt gaaataaaaac 15420
 ctgaaaataa acaggacagg gtggaaaggaa gatggatcc cctctttatg aagaagcagc 15480
 agtcctgttt tatttgcattt tcattttctt ttatttggaa ttcaagaaga aggaggagga 15540
 agagttcaca tccacagact ggtgtgggtt aatagtgtt tctactgtat tccaaatagc 15600
 agccaatgag gctgttacag tgaagccagt cccaaagataa ttgttctgtt cccctattct 15660
 ctaagaagct aaatttgcattt agactgaaac ccataagaa ccattgttca aagttggctt 15720
 gttcaaaaatg aaagattttt aatagtttctt cttatttgcattt agacatagaa 15780
 ttatgatttac tattttatctt ctataatttt catctctata acgtttacaa atactgaaat 15840
 aacccatttggaa aaaaatttggc ttttagctt acttttgcattt tattttatgtt tatccccata 15900
 aaaggcctagg aaatttggtac tatgactttt agtattgttca tttaatagat gaaaacacag 15960
 aaactcaaaatg atgttaataa tggggccaa gttcacaaatg ctgtatccat acaacaacag 16020
 ggcctgaact cctgggtttc tgatttgcattt tttttttttt cttttttttt cttttttttt 16080
 catcaccccccc acacttgcac atagaacattt tccttagtgg ctttgcattt tgatgaccat 16140
 tactgttccct tctacttcaa aataagcaaa ttatcctaca gattcagagc tggtagatgtt 16200
 gtgtgttcaa gcagccattt ccatttgcattt gtttgcattt cactcacattt aaagtattgtt 16260
 ccttaatgtt atattttatctt agataattctt accttgcattt ttcaatggcc ccagtcttgc 16320
 ttgttcaattt tttttttttt tttttttttt ttcttgcattt ttcttgcattt ttcttgcattt 16380
 gctgtatattt gagttttatc tttttttttt tttttttttt tttttttttt tttttttttt 16440
 cactgggttca tcagttacaca acatttgcattt tttttttttt tttttttttt tttttttttt 16500
 aaccatttcca atccattttt tttttttttt tttttttttt tttttttttt tttttttttt 16560
 ctttccattt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16620
 tgattttccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16680
 tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16740
 tagggaaatggcc tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16800
 ttcttaatgtt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16860
 cttttttttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16920
 cttttttttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 16980
 atgatttttcca tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17040
 atgaaatccat tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17100
 tgatgttattt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17160
 gaggggtggaa agactccat tttttttttt tttttttttt tttttttttt tttttttttt 17220
 aaaaaaaaaatggaa tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17280
 tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17340
 tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 17400

ttctatttta cttaaagctat agtaagagat aactaatata actgagggat ttttaaatgc 17460
 attttaatg gtcacataat agaaattatt tcataaaaat cttaacagca taaatgaata 17520
 tacactttt aataccaaca gaaaaattag aattccatat gaaagttgaa taagtattac 17580
 ccaacattga agacttgggt cgtaaggcat ctttctccat atagctttat gacataaaaa 17640
 tctgtacgc ttttagcactcgactttta attaatcctg tcaccatttt tctgttctca 17700
 tagccagggg cttggcttat aagtatgaac taagcaaact aaattaaatt gtttaagta 17760
 tttcccagg ctatcatatt ttaagctatt tactggtgca actatagatt attaataagt 17820
 tgtttcttag gatcaaaaaca atcagactaa tcaatttctc aataatgaat tggcctgtta 17880
 gaggaataat tctactaattc cttaaaacca ctacaagaga tagaccatgt atattttatt 17940
 tattttaaa aataagttt agatgtgatt tacatacaag aacattacta attttgcgtg 18000
 tcccatttaa taagtttga caaatatatt tatttgcgtt accacaccac aatctaaata 18060
 taggacgttt atatcaccac taaaagttt tttcctgctc ctgagactat ttatagacac 18120
 aaatgcgtgt atttgcataat gcttagaaaa ggtctagaaa aaaaaacagt aaatgttaaa 18180
 gtggtatct tcagagagaa gaaagaagaa aagaagtggaa tggacatgaa acagtaaagg 18240
 accctcattt tggactttac atatgtctgt tttcttccat tatttgaat aaacatgcta 18300
 tatttataaa ttattnacat ttacaagaaaa atgaaacaaa atcaacacgc acattcaaga 18360
 tcattatggt caagtactaa agtatgtgag agtgttaatg tccttagaat ttggccacag 18420
 ttagctggtc ctactctgt ccaagccggt cctattttgt gaattaatct catttgatgc 18480
 caattttat tacattctct ccaaaaaact agtctcaaca gtttgcgttc tcctcaagtt 18540
 cacagcatta tctctgtat atctatattt tatttgcgtt aagagaatta acccatgtaa 18600
 gctccatgag gtagggatt tctcatcggtt ttgttccacca gtgtttctc atcttgaaga 18660
 gtacatgaca attactgggc tcccagtatc tatgtgttgc attaatgaaa ttcttaact 18720
 ttaatctacc tcaaaaatgtc tctatcttct tgattctctc cttcctttct ctatcagaaa 18780
 atgatggtcc tcttattttc caagttattc cggcctgtq ccctgtatcc catctcttct 18840
 cacttccct tccttcctgc ctccattctc ctgtccctta tgaaaaacaa gcaagaccat 18900
 caattctatc aagttatcat tatgtcaactc tgttcttata aacatatttt tagtattgaa 18960
 gagggcttct tctacttact cctgaacacctt gtacaatgtt gtttaggtct tcattttttt 19020
 atcatagcta ctttattttaa agtcaacccat ggcttttaat tgccaaattt aatggcttat 19080
 cttcacccctt tgaaatgtgt tatgttgcgtt accacagtct ctttgcgtt cagtccttc 19140
 acttggactt ccataacaca atgatttctg attttccttc tgtttgcgtt tgttcctttt 19200
 gtcccaggca ctggctactc cacccctccac ctctctgtt tcatttagcat tccccaaagga 19260
 ttcttcaaaa ctctctttct tccttggaga agtcaacttgc gcttaattt ggaccatattc 19320
 tatggcttctt ctatgtttt tcaggacttgc ctttcaacactt attcttctg taggtgattc 19380
 cattaactgt tgcccatatg gtatgtccaa gacagaccc tcgttgcgtt cccttgcgttc 19440
 caaaaacttcc gcaatatgtc caaatttccat agcctgcacat tcagactttt attatctgcc 19500
 tccaagtttataccatca tatttcatttataatttctgt tctccaggtt cactggaaag 19560
 ctggccatttctc ctatgtatccat cctacaaact cttcctgcct cccactcacc ctcatctctg 19620
 ctgtcaaaaat gcaaccttcc ctcaagagtc atttcacagg accccctttt ctatgaagcc 19680
 ctcaagggttga aataattttt tgcctttttt tccattttat ttttggagtg tttatggcat 19740
 ttaacatacc ttactttgtat tacaaatattt tgccttgcgtt cctcttttgc aaatttctta 19800
 aaggtagaga ccattgtatg ttttcttcat atgttgcgtt tgcttaacag aactatggcc 19860
 attgtccaca ttcatatgtc agcctttgtt gttattgtt tgaggagctt cctctcatga 19920
 atgccttgc tttctctccc acagactcat ccccttatattt atgacctgc tgccatgaaa 19980
 gtgcctactg ctatgtgggc tggtggacat gatgtccctcg taacacccca ggatgtggcc 20040
 aggataactcc ctcaaatcaa gagtcttcat tactttaaagc tatttgcgtt tggaaccac 20100
 tttgattttgc tctggggctt cgtatcccctt caacggatgt acagtgaat catagctta 20160
 atgaaggcat attcctaaat gcaatgcatt tactttcaat taaaagtttgc ttttgcgtt 20220
 cataaggac ttttagaaaaaa atggtaacca acaatggatg ttttgcgtt cccctgggg 20280
 gagatgcaca gtggagtcgtt ttttccatgtt caatttgcgtt agtgcgttattt atgttttagag 20340
 acatcttgc atgggaccat ctacagggtcc ttataaaacaa tgaggtagat taggcaaaaa 20400
 gataaaacaaat ttgcgtacttctt atctggcattt taagtctaat taaaatttttttgc 20460
 ataccatgaa gtatagaaat gtctgaagct tcaaaaggaaac agtggaaattt cttaaggatc 20520
 ctatatggaa acctctgttgc tcattttattt tatttgcgtt gctatggccaa tggacagagt 20580
 gtgggatttag gaggaggcc tcgttacttctt ttataaaatgtt ttcttagctt tcctgaagat 20640
 gtatagacat ttttactttt ttaggttattt tcaacatcag aaattcaaaa aagtcccaa 20700
 agattcttcc agagaagccc tctttctta caatcttcatc cctggctatc tgcgttaacg 20760
 gaatcttgc gatacatgttcaaaaatcttcc ctttattaaag cagaaataaa 20820

tgtacagca	tcaatatcat	tttataatca	tagggaggct	tctttgttta	gcatgtaaatg	20880
ccccctttac	aggcttttg	ttctttgagg	ggttgaaca	ttccatgaaa	aactgacaga	20940
tagaaactg	acaataaaaag	attgagctaa	agatggaagc	agaaaagtact	aggctagata	21000
gtctctaaac	attaagtatt	ttcttcctcc	atctaaaag	caatgagaag	ccacccaaat	21060
attttaccta	atggaaacct	gattgcgc	tttttgtaac	caccacttg	gctgctacat	21120
agagaatgga	ttagaagatg	ccaacaaaag	attctgagca	agtctgtaaa	tctgatcaag	21180
tgttctgtat	caggctgata	tccttctgt	ctaagagaga	tgatccttgg	aaaatccaga	21240
gccagctcca	taatactttc	ctgctctgct	ggcaaattca	caagctgctg	gcccctggag	21300
ccattcttct	ctcaaaaacta	gcattcatca	atthaatgta	tacgtattga	tgggaaataa	21360
tggtcaactat	gaaaaccatg	tgataatatg	gaaaaatacc	catgatataa	tgttatgtga	21420
agagaagaaaa	atgaaaactgg	tagaactatg	tgattgcaaa	tatatacaaa	tataaaaca	21480
attatatgac	tttataaaaat	atttgatat	aatgaaaact	gaagcaatat	aaaaaataaa	21540
attagttgt	tcagggtagt	aacatgatga	gtgattaata	gttttaatt	ttaatataag	21600
taatgacata	atgttacaac	ttgtccaaat	ctcacaaaca	taatattcag	taaaggaaga	21660
taaacataaa	agaatacata	tttattata	cattttatg	taggctaatt	gatggttctg	21720
aaagccttaa	aaagcttact	tttaggagga	gaatcatgcc	ttggaggact	ctagggtcca	21780
aaaaaatgtc	ctaataactag	agcttagtgc	agttagatt	attataatac	atttattat	21840
tttgtctgga	ataccaagat	gacttccaag	caggaatgg	gtctagcaac	actttactga	21900
tggggactt	ggccacagac	ttgtataca	aatttttgg	tatgttgaca	atgtttctcc	21960
ttatttttct	tacttataca	aagcaagaaa	tttgctcac	aaccttgaaa	cagacttacc	22020
aggttcctcc	agtttcccaa	gcctcaat	ctcattgcta	tttttaa		22067

225 230 235 240
Leu Gly Thr His Val Cys Thr His Val Ile Leu Lys Glu Leu Cys Gly
 245 250 255
Asn Leu Cys Phe Leu Leu Cys Gly Phe Asn Glu Arg Asn Leu Asn Met
 260 265 270
Ser Arg Val Asp Val Tyr Thr Thr His Ser Pro Ala Gly Thr Ser Val
 275 280 285
Gln Asn Met Leu His Trp Ser Gln Ala Val Lys Phe Gln Lys Phe Gln
 290 295 300
Ala Phe Asp Trp Gly Ser Ser Ala Lys Asn Tyr Phe His Tyr Asn Gln
 305 310 315 320
Ser Tyr Pro Pro Thr Tyr Asn Val Lys Asp Met Leu Val Pro Thr Ala
 325 330 335
Val Trp Ser Gly Gly His Asp Trp Leu Ala Asp Val Tyr Asp Val Asn
 340 345 350
Ile Leu Leu Thr Gln Ile Thr Asn Leu Val Phe His Glu Ser Ile Pro
 355 360 365
Glu Trp Glu His Leu Asp Phe Ile Trp Gly Leu Asp Ala Pro Trp Arg
 370 375 380
Leu Tyr Asn Lys Ile Ile Asn Leu
 385 390